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MCADAMS, BRAD	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/605,938	HILL ET AL.	
	Examiner	Art Unit	
	ROBERT MCADAMS	4134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :09/01/2004, 09/01/2004, 08/31/2004, 08/30/2004.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 29 and 65 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter as follows. **Claims 29 and 65** define a computer program embodying functional descriptive material. However, the claims do not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since

use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed computer program can range from paper on which the program is written, to a program simply contemplated and memorized by a person.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 28 and 64, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite by including a reference to more than one statutory class of invention.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14, 19-20, 22-25, 28-38, 40-45, 47-52, 54-56 and 59-60, 62-65 are rejected under 35 U.S.C 102(e) as being anticipated by U.S. Patent No. 6,985,937 B1 to *Keshav*.

As to **Claim 1,** *Keshav* discloses a method for regulating resource usage (Figure 1) by a plurality of programs (Virtual Server 162A-G, Figure 1) running on a plurality of machines (Physical host 160A-C, Figure 1), the method comprising: providing a resource policy specifying allocation of resources amongst the plurality of programs (The quality of service is a policy that allocates resources to each virtual server. Paragraph bridging Column 3 and 4); determining resources available at the plurality of machines (Column 5, Lines 10-15); detecting requests for resources by each of the plurality of programs running on each of the plurality of machines (Column 5, Lines 6-8); periodically exchanging resource information amongst the plurality of machines (Column 5, Lines 10-12), the resource information including requests for resources and resource availability at each of the plurality of machines; and at each of the plurality of machines, allocating resources to each program based upon the resource policy and the resource information (Column 5, Lines 6-10).

As to **Claim 2,** *Keshav* further discloses wherein said resources include communication resources (Column 4, Lines 29-37).

As to **Claim 3,** *Keshav* further discloses wherein said communication resources include network bandwidth shared by the plurality of machines (Column 4, Lines 29-37).

As to **Claim 4,** *Keshav* further discloses wherein said resources include computing resources (Column 4, Lines 29-37).

As to **Claim 5,** *Keshav* further discloses wherein said computing resources include processing resources available at the plurality of machines (Column 4, Lines 29-37).

As to **Claim 6,** *Keshav* further discloses wherein said computing resources include memory resources available at the plurality of machines (Column 4, Lines 29-37).

As to **Claim 7,** *Keshav* further discloses wherein the plurality of programs includes an application that is running on a plurality of computers (Column 5, Lines 10-15).

As to **Claim 8,** *Keshav* further discloses wherein the plurality of programs includes an application that is running on a single computer (Column 3, Lines 59-63).

As to **Claim 9,** *Keshav* further discloses wherein the resource policy includes a rule specifying a percentage of available resources to be allocated to a particular program (Column 4, Lines 7-9).

As to **Claim 10,** *Keshav* further discloses wherein the resource policy includes a rule specifying a specific quantity of resources to be allocated to a particular program Column 4, Lines 3-4).

As to **Claim 11,** *Keshav* further discloses wherein the resource policy is user configurable (Column 4, Lines 4-6).

As to **Claim 12,** *Keshav* further discloses wherein the resource policy specifies priorities for allocation of resources amongst the plurality of programs (Free resources are distributed to virtual servers first before the virtual server is transferred to another server Column 6, Paragraph 1).

As to **Claim 13,** *Keshav* further discloses wherein the priorities for allocation of resources are automatically adjusted based on occurrence of particular events (Column 6, Paragraph 1).

As to **Claim 14,** *Keshav* further discloses wherein said detecting step includes detecting each instance of a program running at each of the plurality of machines (Column 4, Paragraph 3).

As to **Claim 19,** *Keshav* further discloses wherein said exchanging step includes exchanging information based on changes in resource availability since a prior exchange of information (Column 6, Paragraph 4).

As to **Claim 20,** *Keshav* further discloses wherein said exchanging step includes exchanging information based on changes in requests for resources since a prior exchange of information (Column 5, Paragraph 5).

As to **Claim 22,** *Keshav* further discloses wherein said allocating step includes regulating usage of resources by each of the plurality of programs (Column 5, Lines 6-10).

As to **Claim 23,** *Keshav* further discloses wherein said allocating step includes scheduling processing resources at each of the plurality of machines (Column 4, Paragraph 1).

As to **Claim 24,** *Keshav* further discloses wherein said allocating step includes regulating the volume of communications sent by a particular program (Column 4, Paragraph 1).

As to **Claim 25,** *Keshav* further discloses wherein said allocating step includes delaying the sending of a communication by a particular program (Column 6, Paragraph 5).

As to **Claim 28,** *Keshav* further discloses a computer-readable medium having processor-executable instructions for performing the method of claim 1 (It is inherent that the instructions are contained on a computer-readable medium. Column 3, Paragraph 2).

As to **Claim 29,** *Keshav* further discloses a downloadable set of processor-executable instructions for performing the method of claim 1 (Software driver, Column 3, Lines 52-53).

As to **Claim 30,** *Keshav* further discloses a system for regulating utilization of computer resources of a plurality of computers, the system comprising: a plurality of computers (Physical host 160A-C, Figure 1) having resources to be regulated which are connected to each other through a network ; a monitoring module (Physical host load balancer 130, Figure 1) provided at each computer having resources to be regulated, for monitoring resource utilization and providing resource utilization information to each other connected computer having resources to be regulated; a manager module providing rules governing utilization of resources available on the plurality of computers and transferring

said rules to the plurality of computers; and an enforcement module at each computer for which resources are to be regulated for regulating usage of resources based on said transferred rules and the resource utilization information received from other connected computers (Dynamic Resource Configuration Module 100 manages and enforces quality of service rules governing the utilization of resources at each of the plurality of computers (Paragraph bridging Column 3 and 4)) .

As to **Claim 31,** *Keshav* further discloses wherein said resources to be regulated include communication resources (Column 4, Lines 29-37).

As to **Claim 32,** *Keshav* further discloses wherein said resources to be regulated include processing resources (Column 4, Lines 29-37).

As to **Claim 33,** *Keshav* further discloses wherein said monitoring module at a given computer identifies at least one application running at the given computer (Column 5, Lines 5-8).

As to **Claim 34,** *Keshav* further discloses wherein said monitoring module detects a request for resources by said at least one application (Column 5, Lines 60-61).

As to **Claim 35,** *Keshav* further discloses wherein said monitoring module detects a request for network communication by said at least one application (Column 5, Lines 45-48).

As to **Claim 36,** *Keshav* further discloses wherein said monitoring module at a given computer determines resources available at the given computer (Column 5, Paragraph 5).

As to **Claim 37,** *Keshav* further discloses wherein said monitoring module at a given computer provides resource utilization information to each other connected computer at a fixed interval (Figure 5, Column 11, Lines 18-19).

As to **Claim 38,** *Keshav* further discloses wherein said fixed interval is a sub-second interval (Paragraph bridging Column 10 and 11).

As to **Claim 40,** *Keshav* further discloses wherein said monitoring module at a given computer provides resource utilization information to each other connected computer in response to particular events (Module monitors resource utilization to determine best fit in response to virtual server becoming overloaded. Column 6, Lines 10-13).

As to **Claim 41,** *Keshav* further discloses wherein said resource utilization information provided by said monitoring module includes information regarding requests for communication resources (Column 5, Paragraph 4).

As to **Claim 42,** *Keshav* further discloses wherein said resource utilization information provided by said monitoring module includes information regarding requests for processing resources (Column 5, Paragraph 4).

As to **Claim 43,** *Keshav* further discloses wherein said rules provided by said manager module include a rule specifying a percentage of available resources to be allocated to a particular application (Column 4, Paragraph 1).

As to **Claim 44,** *Keshav* further discloses wherein said rules provided by said manager module include a rule specifying a specific quantity of resources to be allocated to a particular application (Column 4, Paragraph 1).

As to **Claim 45,** *Keshav* further discloses wherein said manager module permits a user to establish rules governing utilization of resources (Paragraph bridging Column 3 and 4, Lines 4-6).

As to **Claim 47,** *Keshav* further discloses wherein said enforcement module schedules processing resources at each of the plurality of computers based on said transferred rules and the resource utilization information (Column 4, Paragraph 2).

As to **Claim 48,** *Keshav* further discloses wherein said enforcement module regulates the volume of communications sent by a particular application (Column 7, Paragraph 7-8).

As to **Claim 49,** *Keshav* further discloses wherein said enforcement module regulates the frequency of communication by a particular application (Communications are denied when resources become overloaded. Column 9, Paragraph 5).

As to **Claim 50,** *Keshav* further discloses the system of claim 30, further comprising: a configuration module for a user to establish rules governing utilization of resources (Dynamic Resource Configuration Module 100 Figure 1, Column 4 Lines 38-41).

As to **Claim 51,** *Keshav* further discloses wherein said configuration module collects resource utilization information from the plurality of computers (Column 5, Paragraph 1).

As to **Claim 52,** *Keshav* further discloses wherein said configuration module suggests rules governing utilization of resources based, at least in part, upon the collected resource utilization information (Dynamic Resource Configuration Module 100 monitors resource utilization and adjusts the Quality of Service. Column 5, Lines 6-10).

As to **Claim 54,** *Keshav* further discloses a method for scheduling communications by a plurality of applications (162A-G, Figure 1) running on a plurality of computers (160A-C, Figure 1) connected to each other through a network, the method comprising: providing a policy specifying priorities for scheduling communications by the plurality of applications (Column 11, Paragraph 4); periodically determining communication resources available at the plurality of computers (Column 11, Paragraph 2); at each of the plurality of computers, detecting requests to communicate and identifying a particular application associated with each request (Column 8, Paragraph 1); exchanging bandwidth information amongst the plurality of computers, the bandwidth information including applications making the requests to communicate and a measure of communications resources required to fulfill the requests (Column 5, Paragraph 5); and at each of the plurality of computers, scheduling

communications based upon the policy and the bandwidth information (Column 6, Paragraph 2).

As to **Claim 55,** *Keshav* further discloses wherein said communications comprises incoming and outgoing network traffic (Dynamic Resource Configuration Module monitors both system calls (incoming) and requests for more resources (outgoing) Column 5, Paragraph 2).

As to **Claim 56,** *Keshav* further discloses wherein said communication resources include network bandwidth shared by the plurality of computers (Column 4, Paragraph 1).

As to **Claim 59,** *Keshav* further discloses wherein said scheduling step includes immediately transmitting all communications if the bandwidth information indicates communication traffic is light (Communications are continued while communication denials are under specified threshold. Column 9, Paragraph 4).

As to **Claim 60,** *Keshav* further discloses wherein said scheduling step includes delaying a portion of the communications if the bandwidth information indicates communication traffic is heavy (Communications are denied, delaying the communication until a threshold is met. Column 9, Paragraph 5).

As to **Claim 62,** *Keshav* further discloses wherein said scheduling step includes load balancing (Column 11, Paragraph 3).

As to **Claim 63,** *Keshav* further discloses wherein said load balancing includes redirecting communications received at a first computer to a second computer (Column 11, Paragraph 7).

As to **Claim 64,** *Keshav* further discloses a computer-readable medium having processor-executable instructions for performing the method of claim 1 (It is inherent that the instructions are contained on a computer-readable medium. Column 3, Paragraph 2).

As to **Claim 65,** *Keshav* further discloses a downloadable set of processor-executable instructions for performing the method of claim 1 (Software driver, Column 3, Lines 52-53).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 15-18, 26-27, 39, 53, 57-58** are rejected under 35 U.S.C 103(a) as being unpatentable over *Keshav et al* (U.S. Patent 6,985,937 B1) in view of *Ullmann et al* (U.S. Patent 7,120,685 B2).

As to **Claim 15,** *Keshav* discloses said detecting step (Column 4, Paragraph 3).

Keshav does not expressly disclose the detecting step is performed with a frequency established by a user.

However, *Ullmann* discloses a monitoring system (THFL) where the frequency can be adjusted by the user (Column 5, Lines 14-18).

Keshav and *Ullmann* are analogous art because they are from the same field of endeavor with respect to monitoring distributed systems.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the detecting step of *Keshav* with the teachings of *Ullmann* to allow said detecting step to have the frequency customizable by the user. The motivation would have been to allow the user customization options to better analyze data (Column 2, Paragraph 3).

As to **Claim 16,** *Ullmann* further discloses wherein a user can establish a frequency greater than once per second (polling interval could be every minutes)(a user could change the time interval) (Figure 4, Column 5, Paragraph 1). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 17,** *Ullmann* further discloses wherein said frequency can be established by a user (Figure 4, Column 5, Paragraph 1). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 18,** *Ullmann* further discloses wherein a user can establish a frequency greater than once per second(polling interval could be every minutes)(a user could change the time interval) (Figure 4, Column 5, Paragraph 1). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 26,** *Keshav* discloses the method of collecting resource information regarding requests for resources and resource availability (Column 5, Lines 29-33).

Ullmann further discloses generating resource utilization information for display to a user based upon the collected resource information (Column 3, Paragraph 2). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 27,** *Ullmann* further discloses automatically suggesting modifications (Adjusts the frequency) to the resource policy based, at least in part, upon the collected resource (error events) information (Column 7, Lines 4-14). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 39,** *Ullmann* further discloses wherein said fixed interval is configurable by a user (Figure 4, Column 5, Paragraph 1). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 53,** *Ullmann* further discloses wherein said configuration module displays the collected resource utilization information to a user (Column 3, Paragraph 2). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 57,** *Ullmann* further discloses wherein said exchanging step occurs at a frequency established by a user (Figure 4, Column 5, Paragraph 1). In addition, the same motivation is used as the rejection for claim 15.

As to **Claim 58,** *Ullmann* further discloses wherein a user can establish a frequency greater than once per second (Figure 4, Column 5, Paragraph 1). In addition, the same motivation is used as the rejection for claim 15.

5. **Claims 21, 46, and 61** are rejected under 35 U.S.C 103(a) as being unpatentable over *Keshav et al* (U.S. Patent 6,985,937 B1) in view of *Vahalia et al* (U.S. Patent 6,298,386 B1).

As to **Claim 21,** *Keshav* discloses said exchanging step.

Keshav does not expressly disclose using a bandwidth-conserving protocol.

However, *Vahalia* discloses using a UDP protocol to minimize the loss of performance (Column 18, Lines 38-40).

Keshav and Vahalia are analogous art because they are from the same field of endeavor with respect to distributed systems.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the detecting step of *Keshav* with the teachings of *Vahalia* to allow said detecting step to use a bandwidth-conserving protocol. The motivation would have been to minimize the loss of performance (Column 2, Paragraph 2).

As to **Claim 46,** *Vahalia* further discloses wherein said monitoring module uses a bandwidth-conserving protocol for providing resource utilization

information (Column 18, Lines 38-40). In addition, the same motivation is used as the rejection for Claim 21.

As to **Claim 61,** *Vahalia* further discloses wherein said scheduling step includes delaying transmission of communications by lower-priority applications (Column 9, Paragraph 1). In addition, the same motivation is used as the rejection for Claim 21.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT MCADAMS whose telephone number is (571)270-3309. The examiner can normally be reached on Monday-Thursday 6:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lun-Yi Lao can be reached on 571-272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RBM

/Lun-Yi Lao/
Supervisory Patent Examiner, Art Unit 4134